

The Size Effect in Malaysia's Stock Returns



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Abstract The size effect has been the most significant anomaly in stock price. Unlike developed stock markets, Malaysia's market is smaller, less liquid, more volatile, prone to higher risk premiums and has higher cost of funds. These features could be attributed to informational inefficiency, high trading costs, and less competition. Nonetheless, investors have become interested in the Malaysian stock market for international diversification and potentially high returns. Thus, this research aims to examine the size effect in Malaysia's cross-section of stock returns, involving 828 stocks listed in the FTSE Bursa Malaysia KLCI Index from January 2011 to December 2020. Fama–MacBeth-profitability regressions suggest that small firms and dividend payers perform better than large firms and non-dividend payers. Moreover, the small significant positive coefficient of lagged profitability suggests that Malaysian stock's returns are not highly persistent. The findings would benefit investors, fund managers, and top management for portfolio diversification and risk management in Malaysia's stock.

Keywords Firm size · Profitability shocks · Expected stock returns · Fama–MacBeth · Malaysia

1 Introduction

The size effect has been the most significant anomaly discovered in asset pricing literature, and it has been the longest-debated issue in academic discourse. Despite the attention it has received, there is still much debate and misunderstanding on the

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issue of size anomalies in the context of market efficiency. The size effect is the phenomenon in which small firms are found to earn higher returns compared to large firms. Researchers view the discovery of the size effect as a violation of the CAPM propositions in that firm-specific factor, i.e., size is a second source of price risk other than the market factors. Size effect documents are common in US stock markets such as the NYSE and AMEX markets (Banz, 1981) and the NASDAQ market (Lamoureux & Sanger, 1989). More recent literature has evidenced that the size effect disappeared after the early 1980s (Dichev, 1998; Chan et al., 2000; Horowitz et al., 2000; Amihud, 2002). Hou and Van Dijk (2019) discovered that the size effect disappeared only from ex post realized returns after the early 1980s and that size became a robust effect in ex ante expected returns.

There is disagreement on the appropriate use of realized return to measure expected return in asset pricing formulation (Blume & Friend, 1973; Elton, 1999; Froot & Frankel, 1989; Sharpe, 1978). Campbell (1991) decomposed realized stock returns into the sum of expected returns, news about future cash-flows (cash-flow shocks) and future discount rate. In a later study, Chen et al. (2013) suggested that news about future cash-flow is the dominant determinant of stock return. Based on these arguments, Hou and Van Dijk (2019) hypothesized that the disappearance of the size effect could be explained by three possibilities: (1) there were differences in future cash-flow between small and large firms; (2) size is not related to expected returns, neither before nor after the early 1980s; (3) there was no systematic difference between future cash-flows of small firms and large firms.

While some studies evidenced that the size effect had disappeared after the early 1980s, recent literature found it resurrected. Nonetheless, the size effect is highly reported in the US markets, and has also been tested in several studies in other developed markets (Chiah et al., 2016; Ejaz & Polak, 2018; Hashem & Su, 2019). Consistent with the US evidence, Hou and Dijk (2019) confirmed that there was a significantly negative (positive) profitability shock to small (large) firms and, statistically significant size premium in developed Europe after the 1980s. Previous empirical work, however, may not be applicable to a developing market due to differences in regulatory framework and the size and maturity of stock returns. Scholars concern on whether size effect is relevant in stock markets outside the US. Unlike the US stock market, emerging stock markets like Malaysia are still infantile. The Malaysian market is rather smaller, less liquid, more volatile, and prone to higher risk premiums, and higher costs of funds. These features could be attributed to informational inefficiency, high trading costs, and less competition. Nonetheless, investors have become interested in the Malaysian stock market for international diversification and for potential high returns.

Given the prominence of the size effect on stock prices, it needs a critical scrutiny, especially in the case of emerging markets for the advancement of knowledge to benefit investors, scholars, and policymakers. Therefore, this research contributes to the construct validity of the size effect, which is still scarce in emerging markets. Indeed, more research in a diverse sample is required to develop the validity of the theory of asset pricing anomaly. Thus, this study intends to reaffirm the findings of US stock markets based on the Malaysian stock market, which is operating in an

emerging market. Due to the dearth of local studies on this issue, our study would add to the much needed literature on the size effect. Furthermore, this study may provide policymakers with additional empirical evidence on the importance of size effect as a tool for stabilizing markets.

2 Literature Review

Previous studies suggest that size plays a significant role in determining stock prices in the US market (see Banz, 1981; Basu, 1983; Fama & French, 1992). Similarly, the size effect is found to be significant in many stock return studies in Asian markets (see Shum & Tang, 2005; Rouwenhorst, 1999; Wong, 1989). With a few exceptions, the general finding is that size effect does exist: small firms show a greater reaction than large firms. This finding is consistent with the information asymmetry theory, which says that small firms are subject to greater information asymmetry than large firms, because the former are typically not invested in by large institutional traders. Hence, there is a general lack of media and analyst coverage.

Early evidence of the size effect is provided by Ikenberry et al. (1995). They find that the cumulative abnormal returns, CAR (-2, +2) for the smallest quintile firms is 8.19% compared to 2.09% for the largest quintile, while the pre-event price drop as measured by CAR (-20, -3) for small firms is -3.91% compared to -1.21% for large firms. Other studies that provide evidence on the signalling size effect include Otchere and Ross (2002) in Australia; Zhang (2002) in Japan; Firth and Yeung (2005), and Zhang (2005) in Hong Kong; Jung et al. (2005) in Korea; and Koerniadi et al. (2007) in New Zealand.

In a recent study, Hou and Van Dijk (2019) found a strong positive relationship between profitability shocks and contemporaneous stock returns. For the full 1963–2014 sample period, the value-weighted average returns difference between the quintile of firms with the highest profitability shocks and the quintile of firms with the lowest profitability shocks was close to 2% per month. This result suggests that the cross-sectional profitability model captures the market's cash-flow expectations: firms that are more (less) profitable than expected earn significantly higher (lower) stock returns. It also suggests that profitability shocks can drive a large wedge between realized and expected returns. The study evidenced that the average profitability shock is close to zero for both small firms and big firms before 1983. But after 1983, small firms experienced large negative profitability shocks, whereas big firms experienced large positive shocks. The latter result suggests that the realized returns of small (big) firms for the post-1983 period are lower (higher) than expected. As a result, the observed size premium in ex post realized returns during this period underestimates the "true" size premium in ex ante expected returns.

In terms of expected return indicators, there are several alternative proxies that have been used in asset pricing tests in the past literature. Brav et al. (2005) extract measures of expected returns for individual stocks from analysts' target prices.

Campello et al. (2008) construct measures of expected stock returns using corporate bond yields. Claus and Thomas (2001), Gebhardt et al. (2001), and Pástor et al. (2008) estimate the implied cost of capital (ICC) based on market prices and analysts' earnings forecasts and use it to test the risk-expected return relationship. Hou et al. (2012) estimate expected returns using a modified version of the ICC in which earnings forecasts are obtained from a cross-sectional profitability model rather than from analysts' forecasts. In their seminal work, Hou and Van Dijk (2019) used adjusted realized return for the price impact of cash-flow shocks to measure expected returns. Compared to deriving expected returns from market prices (like in the ICC literature), the advantage of adjusting realized returns is that it provides insights into the patterns (and sources of) in-sample cash-flow shocks that drive the differences between realized and expected returns. Furthermore, while the ICC measures a firm's long-term average expected stock return (the internal rate of return), the adjusted expected return approach allows for the estimation of the one-period-ahead expected return by adjusting realized returns for the price impact of cash-flow shocks over that period.

Given the current state of the literature, the question of whether the size effect exists outside of the US markets has to be answered empirically. This research attempts to fill the gap in the literature by testing the theory of size anomaly in the context of the Malaysian stock market and compare the findings with those in the US markets.

3 Data and Methodology

3.1 Data Description

This study used 828 stocks in the FTSE Bursa Malaysia KLCI Index. The FTSE Bursa Malaysia KLCI, also known as the FBM KLCI, is a major stock market index which tracks the performance of the 30 largest companies by full market capitalization listed on the Main Board of Bursa Malaysia. We collected the monthly stock returns from January 2011 to December 2020. In addition, following Hou and Van Dijk (2019), we also use the following variables. Size is the market equity at the end of December of the year t . Earning is operating income and depreciation. Book equity is stockholder equity value. BE/ME is book equity divided by market equity value at the end of year $t-1$. Market value of a firm is calculated by adding its total assets and the difference between market equity and book equity. Lastly, total assets and dividends are also collected. All data is extracted from Thomson Datastream.

In order to form portfolios, we sort firms into Top 25%, Middle (both 50% and 75%) and Bottom (below 25%) based on their size, and we calculate the value-weighted and equal-weighted monthly returns on the portfolios.

4 Results and Discussion

Table 1 provides the summary statistics (panel A) and the average value-weighted (panel B) and equal-weighted (panel C) returns, which are in excess of the 1-month Treasury-bill rate of the portfolios. In addition, the differences between the bottom and top portfolios are also reported. Both value-weighted realized returns and equal-weighted realized returns for the bottom portfolio are higher than top portfolio. Over the sample period, the results show that small firms perform better than large firms. The value-weighted spread between small firms and big firms is 0.9% per month with a *t*-stat of 3.38. The equal-weighted spread between small firms and big firms is 0.7% per month with a *t*-stat of 1.92.

Table 2 shows the average coefficients and their time series *t*-statistics from annual Fama and MacBeth (1973) cross-sectional regressions of profitability (earnings scaled by lagged total assets, E_{t+1}/A_t) on variables that are hypothesized to capture differences in expected profitability across firms. V_t/A_t is the market-to-book ratio of a firm’s assets. DD_t is a dummy variable that equals 1 for dividend payers and 0 for nonpayers. D_t/B_t is the ratio of dividends to book equity. We estimate the regressions for each year between 2011 and 2020.

The results are quite similar to those reported in Fama and French (2006), Hou and Robinson (2006), and Hou and Van Dijk (2019). Profitability is positively related to *D/B* suggesting that firms that pay out more dividends are more profitable (Tables 3 and 4). In addition, the coefficient on *DD* is positive, thus it shows that dividend payers are more profitable than nonpayers. However, in terms of *V/A*, the results

Table 1 Summary statistics and average returns of top-mid-bottom size

	Big 25%	2	3	Small 25%	
A. Summary statistics					
Number of firms	207	207	207	207	
Average Size (RM billion)	6.979	0.338	0.112	0.038	
Maximum Size (RM billion)	95.101	0.708	0.225	0.096	
Minimum Size (RM billion)	0.716	0.227	0.096	0.014	
B. Value-weighted average return					
Value-Weighted realized return (%)	0.35	0.10	0.10	1.25	0.9
<i>t</i> -statistic	2.15	2.56	2.57	2.77	3.38
C. Equal-weighted average returns					
Equal-Weighted realized returns (%)	0.58	1.05	1.04	1.28	0.7
<i>t</i> -statistic	2.20	2.55	2.51	2.68	1.92

Note Realized returns in excess of the 1-month Treasury-bill rate and expressed as a percentage per month

Table 2 Cross-sectional profitability regression

	Coefficient	t-Statistics
Intercept	0.04***	5.02
V_t/A_t	-0.02***	-38.6
DD_t	0.03***	2.47
D_t/B_t	0.34***	6.40
$E/At-1$	0.002	0.25
Adj R^2	0.43	

show a negative coefficient, which is not in line with Fama and French (2006), Hou and Robinson (2006), and Hou and Van Dijk (2019). In addition, the results also indicate that the coefficient on lagged profitability is small and positive but not significant. The average adjusted R^2 is 43%, indicating that the model is acceptable (Table 5).

Table 6. shows the performance of each portfolio based on its size. Using the Treynor-Mazuy Model (1966), the results show that all portfolios have a positive Alpha, indicating that the portfolio has selectivity ability. In addition, the small-sized portfolio seems to generate greater returns than big-sized portfolio. According to Jiang et al. (2021), refers to the market timing ability, which a positive value shows market timing ability. The results indicate that the big-sized portfolio has good timing ability as compared to small-sized portfolio.

Table 3 Average returns of portfolio based on profitability shocks

	High	2	3	Low	High-Low
A. Value-weighted average profitability shocks and returns					
VW profitability shock	0.724	-0.027	-0.342	-1.866	2.59
t-statistics	0.82	-0.091	-1.38	-2.71	4.37
VW realized return	-0.28	-0.37	0.53	0.66	
t-statistics	-0.06	-0.19	2.09	4.45	
B. Equal-weighted average profitability shocks and returns					
EW profitability shock	0.495	-0.048	-0.337	-1.866	2.03
t-statistics	0.76	-0.16	-1.31	-2.59	3.12
EW realized return	0.72	0.92	0.95	1.34	
t-statistics	2.11	2.54	2.09	4.5	

Note Realized returns in excess of the 1-month treasury-bill rate and expressed as a percentage per month

Table 4 Average expected profitability and profitability shocks of size

	Big	2	3	Small	Small-Big
A. Value-weighted average expected profitability and profitability shocks					
VW expected profitability	-0.448	-0.305	0.368	0.467	0.915
<i>t</i> -statistics	-0.84	-0.78	-0.98	-1.34	
VW profitability shocks	-0.289	-0.323	-0.335	-0.48	-0.191
<i>t</i> -statistics	-0.82	-0.81	-0.96	-1.12	
B. Equal-weighted average expected profitability and profitability shocks					
EW expected profitability	0.518	0.363	0.361	0.641	0.123
<i>t</i> -statistics	0.97	0.93	1.08	1.27	
EW profitability shock	0.341	0.390	0.368	0.467	0.126
<i>t</i> -statistics	0.97	0.98	1.09	1.13	

Table 5 Cross-sectional regression of realized returns on size

	Coefficient	<i>t</i> -Statistics
Intercept	0.047	7.70
Ln(size)	-0.00187	-6.12
Ln (BE/ME)	-0.00061	-0.95
Adj R^2	0.004	

Table 6 Market timing

	Big	2	3	Small
Alpha	0.0010	0.006	0.0069	0.011
<i>t</i> -statistics	0.25	1.15	1.19	1.33
β_t	-1.18	-1.67	-1.58	-1.27
<i>t</i> -statistics	-2.74	-2.90	-2.46	-1.41
β_{pt}	50.85	15.01	-3.88	-30.50
<i>t</i> -statistics	0.73	0.16	0.97	0.84

5 Summary and Conclusion

This chapter provides the empirical evidence of the size effect in Malaysia's cross-section of stock returns, involving 828 stocks listed in the FTSE Bursa Malaysia KLCI Index from January 2011 to December 2020. The study used Fama-MacBeth-profitability regressions and found that small firms provide higher stock returns than

large firms. Besides, dividend-paying firms are more profitable than non-dividend-paying firms. Moreover, it is evidenced that Malaysian stock returns are not highly persistent. The findings imply that Malaysia's stocks provide a good testament for portfolio diversification and risk management.

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